
Beneficial Use Reconnaissance Program

Quality Assurance Plan

For Field Data Sheets
On Wadeable (Small) Streams

Updated by State Office of Technical Services for
State of Idaho Surface Water Program

Idaho Department of Environmental Quality

2001

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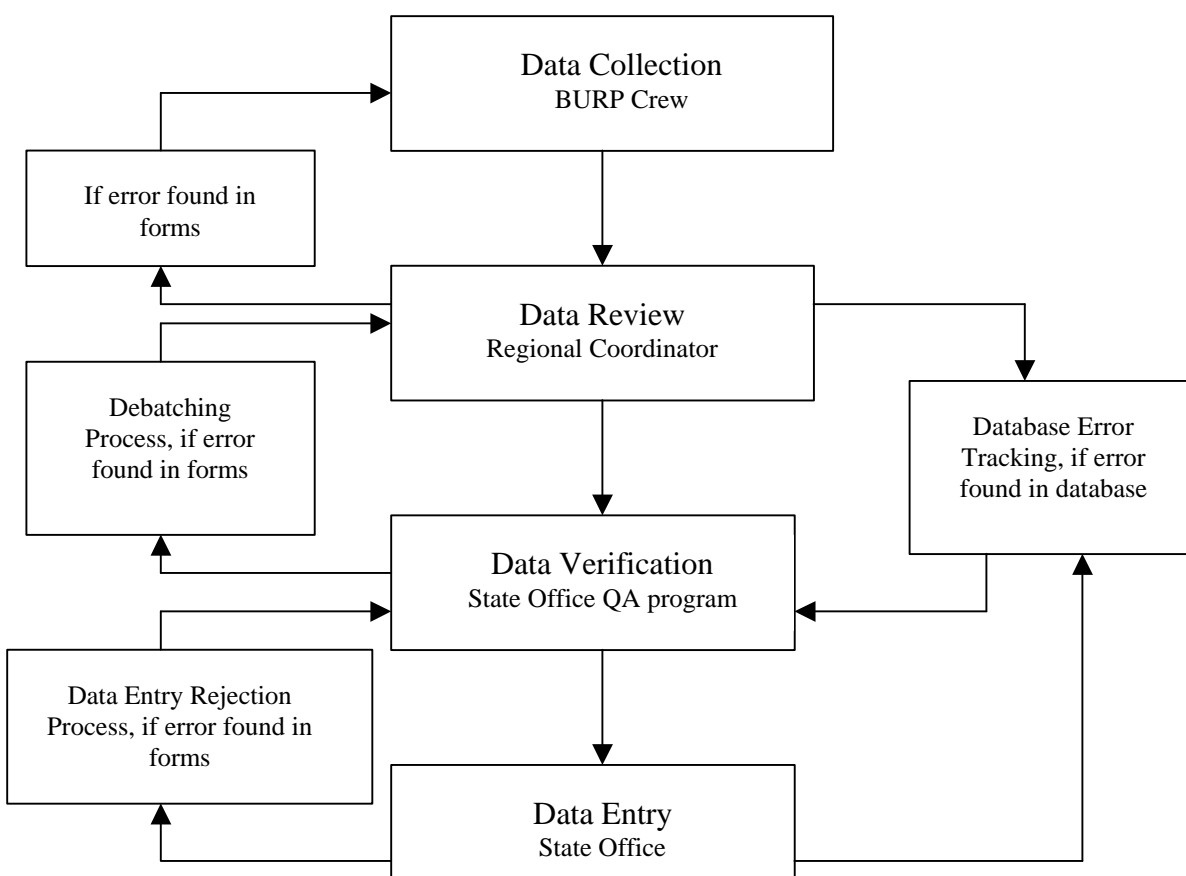
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Introduction

The Beneficial Use Reconnaissance Program (BURP) is based on methods of surface water quality monitoring which are documented in the Idaho Department of Environmental Quality (IDEQ) Annual Work Plan (IDEQ 2001a) and Field Manual (IDEQ 2001b). A common protocol is used statewide for sampling wadeable streams, thus creating comparable data. The BURP protocol has been standardized into six pages of forms for data collection. Once data have been collected, a copy of the field forms is sent to the state office for verification and entry into the BURP database.

The Quality Assurance Plan describes the quality control performed during data review, data verification, and data entry. Verification is critical to usability of surface water quality data. Verification of BURP data is made when state office personnel systematically review every field in each form, recognize possible mistakes, and take the necessary steps to make corrections. Figure 1 specifies responsibilities in the quality control process, from recording data in the field through data entry in the state office.

Figure 1. BURP field form quality assurance plan work flow.



Data Review

Coordinators are responsible for overseeing the BURP crews working from the six IDEQ regional offices. Oversight responsibilities include a review of the BURP field forms. [See Appendix A for examples of the field forms.] After review, the field forms are sent to the state office for final compilation into a central database. The data review by regional coordinators is necessary to verify the data is complete and reasonable. Regional coordinators should ensure that:

- The data on all pages of the photocopied field form are written legibly and can be seen clearly. If data are unreadable due to poor copy quality, the coordinator is asked to recopy the form on a better setting.
- All fields have been completed with the required information.
- If only one set of photos was taken, copies have been made for the state office.
- Macroinvertebrate sample label has both Site ID and T-1, T-2, and T-3 (may also have T-3a and T-3b).
- If there was no large organic debris, then zero has been entered in the field.
- Actual measurements have been recorded for the Wolman Pebble Count and Pool Quality Index. No "less than" or "greater than" symbols have been used, and no word descriptions such as "silt" or "sand" have been entered.
- The map on the last page is labeled with stream name, quad name, scale, and site ID, and the monitoring location is clearly marked.
- All forms are included for each biological assemblage collected.
- If the stream is dry, only information page one of the field forms is recorded.

Data Verification

After the regional data review, BURP field forms are received by state office quality assurance personnel. The reported data are verified to ensure measurements reflect actual conditions at the stream sites. The quality of BURP data is ensured by data quality objectives, including comparability, accuracy, completeness, and representativeness. Data quality objectives are achieved by analysis of the BURP protocols contained in the Annual Work Plan (IDEQ 2001a) and Field Manual (IDEQ 2001b), and verifying the protocols are followed.

Mandatory field form tracking procedures for monitoring the status of the forms are included in Appendix B. Mandatory field form debatching procedures are found in Appendix C. Debatching is used if it is necessary to send field forms back to the regional office for correction.

Field Form Page 1

Stream Name

- Required.
- Spelling must be EXACTLY consistent with the Geographic Names Index System (GNIS) (U.S. Geological Survey 2000). No abbreviations are allowed. The database will accept up to 50 characters for this field.
- Be aware of similar spellings such as "Tenmile Creek" and "Ten Mile Creek" which are both

different and should not be written as “10 mile Creek.” Also note how a stream name is organized. “Middle Fork Boise River” is not the same as “Boise River, Middle Fork.”

Site ID

- Required (for data handling purposes, make sure it is on every page).
- Must be 12 digits. Table 1 illustrates the site ID numbering convention.

Table 1. Structure of BURP site identification numbers

Present year	4 digits	2001
Waterbody type	1 digit	S-stream
		R-river
Regional Office Abbreviation	3 digits	IDF-Idaho Falls
		POC-Pocatello
		TWF-Twin Falls
		BOI-Boise
		LEW-Lewiston
		CDA-Coeur d’Alene
Crew	1 digit	A, B, C, D for regional offices E,F for contract crews W-wilderness V-variability
Site Number	3 digits	Example: 001, 045, 165

Example of Site ID for Boise “A” crew, site 34: 2001SBOIA034

Date

- Required.
- The format is Year/Month/Day (YYYY/MM/DD).
- The date is eight digits long. “01/6/3” is not correct. In these cases, add the zeros to make it “2001/06/03.”

Hydrologic Unit Code (HUC)

- Required
- Must be eight digits.
- Also called “fourth field HUC” or “fourth field cataloging unit.”

PNRS

- Optional.
- Acronym for Pacific Northwest River Study. The PNRS is a government study that described segments of streams and rivers to give them specific numbers.
- PNRS has the format NNNN.NN. For example, 0152.65

WBID Number

- Required.
- Idaho's unique waterbody identification number. This number is composed of the eight-character HUC and a three-character georeferenced sequential number (001, 002, 003, ...999). The number is a numerical identification used in the standards.
- For example, 17060207009 references a waterbody in the Middle Salmon River/Chamberlain Creek subbasin.

Public Land Survey

- Required to 1/16th section. 1/64th section is optional.
- To describe 1/16th of a section, the correct method is:
Township, Range, Section, (blank), 1/16th section, 1/4 section
For example:
Twnshp 04N, Range 03W, Section 23 , ____ 1/4 of the , SE1/4 of the, NE1/4
- To describe 1/64th of a section, the correct method is:
Township, Range, Section, 1/64th section, 1/16th section, 1/4 section
For example:
Twnshp 04N, Range 03W, Section. 23 , SW 1/4 of the , SE1/4 of the, NE1/4
- To assist in verifying location when using 1:24,000 topographic maps use the locator template shown in Figure 2.

Longitude/Latitude, Datum, and Lat/Long Confidence

- Required.
- Degrees and minutes should be integers only (no decimal or other text).
- Seconds should be decimal numbers with either two or three digits to the right of the decimal.
- Longitude should be reported as a negative integer (quality assurance personnel may add the negative sign).
- Check the datum to make sure that it is NAD 27.
- Make sure the lat/long confidence has been selected.
 - If the crew reported corrected GPS data, 2-5 meters should be checked.
 - If the crew reported uncorrected GPS data, 100 meters should be checked.
 - If the crew reported via map, 500 meters (estimate) should be checked.

GPS Filename

- Optional.
- Should include extension; “.ssf” for uncorrected or “.cor” for corrected.

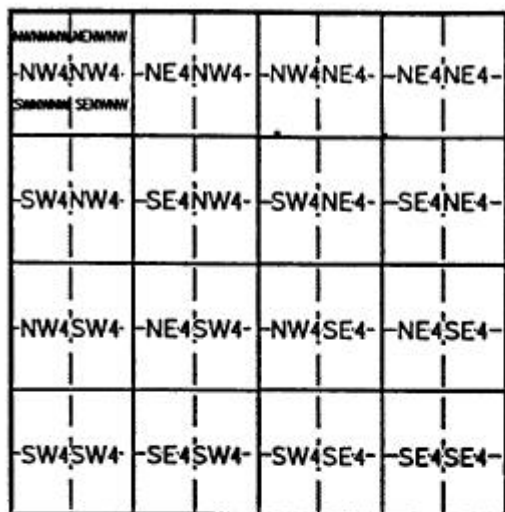
County

- Required.
- Check spelling.

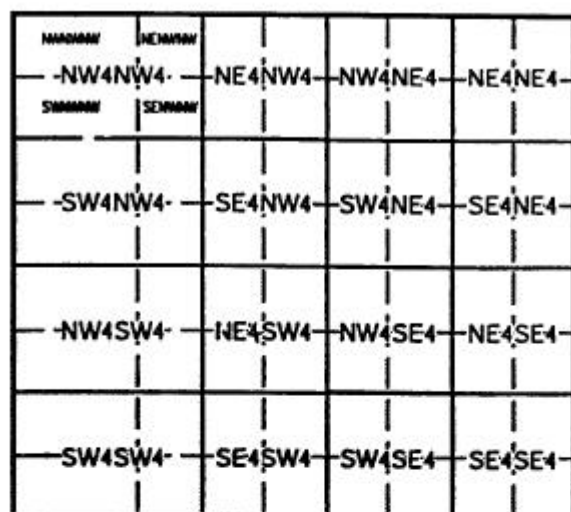
Figure 2. Depiction of IDEQ public land survey locator template.

For sections:	Use template called:
1 - 5	A Tall Section
7, 18, 19, 30, 31	A Wide Section
6	A Tall and Wide Section
All other sections	A Normal Section

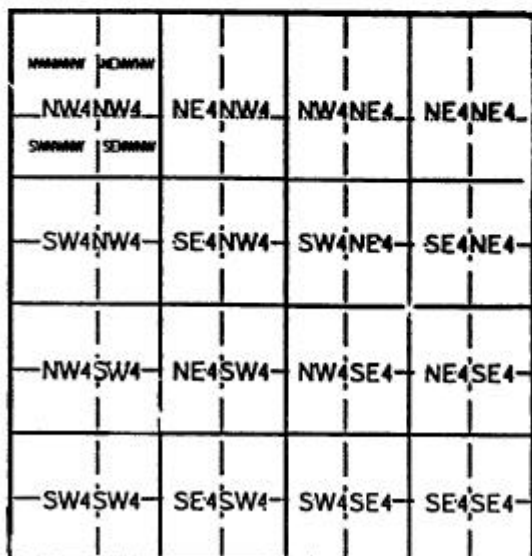
A Normal Section



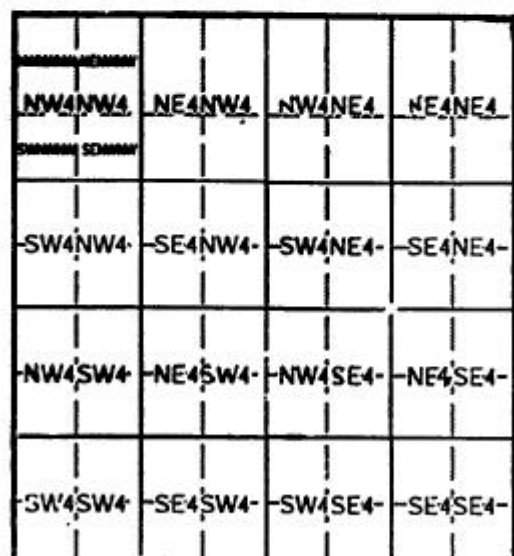
A Wide Section



A Tall and Wide Section



A Tall Section



Ecoregion

- Required.
- Usually the crews are right, but if something does not look correct, such as the Northern Rockies Ecoregion at a site in the Owyhee Mountains, double-check it. The crews are told to determine the ecoregion by what they see at a site, not what the map might indicate for a particular location. At boundaries of ecoregions, an overlapping effect can occur, or “fingers” of one ecoregion can protrude into adjacent ecoregions.
- The full ecoregion name must be used: “Snake River Basin/High Desert,” not “Snake River.”
- If an error is suspected, debatch and have the regional office re-evaluate the ecoregion.

Map Elevation

- Required.
- Units should be circled.
- Make sure units are reasonable for location of measurement. Examples of errors might be 400 feet elevation and 4,500 meters, which are too low and too high for Idaho, respectively.

Location Relative to Landmark

- Required.
- Ask yourself, “Could a person new to the area find this site without any trouble?”
- Description must be relative to a permanent structure or point on the ground.
- Do not use information that is only found on a map such as section lines, contour lines, or county lines. Do not use vague information like “bend in road.”
- Good locations are mountain peaks with names, road intersections, road mile markers, stream confluences, power lines, small towns, waterfalls, islands, campgrounds, etc.
- Include all Forest Service road numbers.

Weather Conditions

- Required.
- Three categories of weather may be considered: cloud cover, intensity of rain, and amount of wind.
- Weather may be described with suggested adjectives shown in Table 2.

Table 2. Suggested format of weather descriptions.

Temperature	Cloud Cover	Intensity of Rain	Amount of Wind
Hot	Foggy	Misty	Thunderstorms
Cold	Partly cloudy	Light Rain	Breezy
Warm	Mostly cloudy	Raining	Light wind
Cool	Cloudy	Hard Rain/Downpour	Windy
	Clear		Very Windy
	Sunny		

Crew Members

- Required.
- Format is “First Initial, Last Name.” For example, J. Smith.

General Wetted Width

- Required.
- This is a preliminary estimate (in meters) to give the crews an idea of how long their sample site is going to be.
- If the crew has mistakenly used either the < or > symbol, calculate and replace value with the average of all three transects’ wetted width measurements, which are given on the fifth page of the BURP field forms.

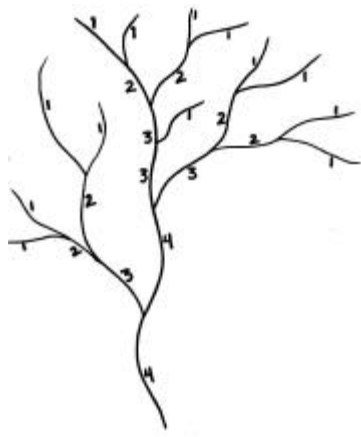
Total Reach Length

- Required
- Must be at least 100 meters if the stream is less than or equal to 2.5 meters wide.
- Must be 40 times the wetted width if the stream is more than 2.5 meters wide.
- This number will not always match the Longitudinal Habitat Distribution (LHD) total on page 6. Though the numbers are a description of the length of the stream, the measurement methods for both are different. It is not incorrect if the crew lists the LHD total here, but the Quality Control (QC) person does not need to correct it if an estimate is given.

Stream Order

- Required
- See Figure 3 for an indication of stream order classification.
- One of the numbers should be circled; QC personnel may double-check it. Stream order describes the size of a stream. Using a 1:100K USGS map, start at the headwaters and count the tributaries that make up the stream/river at hand. Do this until you have reached the BURP site. Only count perennial streams (no ephemeral or intermittent streams; marked by a broken blue line on the map). When a first order (headwater) stream joins with another, it becomes a second order stream. Two second order streams together become a third order stream, and so forth. However, when a first order stream joins a second order stream, the combination remains a second order stream. If a lower numbered stream joins with a higher numbered stream, the higher number remains at the original higher order. Theoretically, this is because the amount of flow entering the third order stream from the second order will not increase the volume of the third order stream significantly. On-site, though, the crew may see that the tributary is as big as the main stem. This call can only be made in the field, so check with the crew when in doubt. Alternatively, the GIS stream coverage may be consulted for stream order. The GIS stream coverage is the definitive reference and supercedes the 1:100K USGS map.
- Alternatively, the GIS stream coverage may be consulted for stream order. The GIS stream coverage is the definitive reference and supercedes the 1:100K USGS map.

Figure 3. Guide to stream order classification.



Stream Gradient

- Required.
- Make sure the gradient is recorded as a percentage. Conversion is necessary if the gradient is recorded in degrees.
- Determined in the field with the aid of a clinometer, but can also be derived and double-checked in the office by dividing the known elevation change between two points on a stream by the stream (or thalweg) distance between those two points.
- Number is usually less than three percent. If it is greater than four percent, refer to the topographic map to ensure that the site occurs in an area of high relief.

Rosgen Stream Type

- Required.
- Reference Rosgen 1996 methods.
- Entry should consist of one capital alphabetical character.
- Acceptable entries: A, B, C, D, E, F, G.
- Unacceptable entries: a, "A", <A, A-B, any alphabetical characters greater than G.
- QC individual may change from lower case to upper case.
- Classify to Level I only.

Water Temperature

- Required.
- Units are necessary.
- Temperature must be in degrees Celsius ($^{\circ}\text{C}$); QC staff should convert to $^{\circ}\text{C}$ if in $^{\circ}\text{F}$.

Air Temperature

- Optional.
- Temperature must be in $^{\circ}\text{C}$; QC staff should convert to $^{\circ}\text{C}$ if in $^{\circ}\text{F}$.

Time

- Required.
- 24-hour time must be used. For example, 3:30pm 1530 hours.
- There is no colon in 24-hour time.

Amphibians and Fish Observed

- Optional.
- Check electrofishing field sheets to ensure agreement. It is critical to the assessment process that if amphibians or fish were collected that this is noted in the "Amphibian and Fish Observed" fields on the field form.
- Check spelling.

Conductivity

- Optional.
- Should be recorded as a number with one or two decimal places.

Valley Type

- Required.
- Only one should be circled.

Sinuosity

- Required.
- Only one should be circled.

Activities Affecting Reach

- Required.
- Circle all that apply.
- Briefly scan "Additional Comments" to see if there is mention of more activities that were not marked.

Collected

- Required.
- If macroinvertebrate, fish, periphyton, bacteria, amphibians, or fish data from outside agencies have been collected or exist, the boxes should be checked on submitted field forms.

Field Form Page 2

- Required.
- This page is for comments from the crew about anything unusual they might have found or seen. Page 2 should have a description of the site: vegetation types, animal tracks, human activity, and other notable aspects. Drawings are encouraged.
- Check for spelling and legibility.

Field Form Page 3

Discharge Measurement

- Required.
- The IDEQ has formulated a spreadsheet entitled FLOWCALC, which is derived from discharge calculations found in Harrelson et al, 1994. The final value should be entered onto the form and rounded to the nearest tenth of a decimal.

- Due to computer rounding and a slightly different program than the Regional Offices might have, minute changes to cubic feet per second (CFS) measurements are not significant.
- When to tell regional offices about discharge measurement changes:
 - If state office total is significantly different (10 percent) than their total.
 - If the stream's depth is greater than 2.5 CFS, there should be two separate columns of velocity data because the stream's velocity should have been sampled at two different depths.

Macroinvertebrate Samples

- Required.
- Were samples taken during low/stable flow between July 1st and October 15th? Either "Yes" or "No" must be circled.
- Each of the following are required for all three transects:
 - Label should have both Site ID and T-1, T-2, and T-3 (may have T-3a and T-3b).
 - Sampler Used: Hess, Surber, or Kick must be circled.
 - Habitat Sampled: Riffle, Run, Glide, or Pool must be circled.
 - Time: 24-hour time must be used. No colons.
 - Split: Should be blank when no split is taken. If the sample is split, the form should say yes followed by the number of splits ("yes 2", "yes 3").
 - By: Must have first initial and last name of person who collected the sample.

Field Form Page 4

Wolman Pebble Count

- Required.
- A minimum of 50 counts should have been taken at each transect, for a total of 150.
- Each box should have a LEGIBLE total and hash marks to indicate the total. Double-check the tallies for each box.
- The lines labeled "subtotal" and "total" should be blacked out with a marker. These totals are used solely for the field crew as a guide to help them get a tally of at least 50 for each transect. The BURP application for this information only uses the raw data from this page.
- Comments such as "all silt" and "all sand" are unacceptable, as are just writing "50" in one of the boxes. Return to regional BURP coordinator for explanation.
- It is also unacceptable if the crew writes in numbers without any tally marks.

Large Organic Debris

- Required.
- A zero should be entered if no large organic debris was present in the stream.

Canopy Closure

- Required.
- All boxes must have a number entered.
- No number should be larger than 17.

Field Form Page 5

Width/Depth Ratio

- Required.
- All boxes should have numbers entered in them.
- "Bankfull Width" must be larger than "Wetted Width."
- Based on what the wetted width is, there should be 3, 5, or 7 wetted depth measurements (see the small box at right of page 5 on the field form).
- "Average Wetted Depth" is an average of the wetted depth measurements. Double check with a calculator.
- Make sure only one habitat type is circled for each transect.

Photo Information

- Required.
- Roll name can be anything, usually something like "STWF01."
- Individual photo number must be recorded and one direction type (upstream, downstream, panorama) must be circled for general layout photos.
- Detailed photos (like photos of amphibians, unique situations, unknowns) need to be recorded in the "Other" area.
- Azimuth is optional.
- Duplicate photos need to be recorded separately.

Horizontal Distance of Undercut Banks

- Required for streams with transects with undercut banks.
- Blank means undercut bank not observed.
- Values should be positive.
- Comments are to be related to the description of undercut banks.

Field Form Page 6

Longitudinal Habitat Distribution

- Required.
- All stream habitat types must have a total in the "total" space provided. If one or more of the habitats did not exist within the reach, a "0" should be in the "total" space.
- This total may be different from "Total Reach Length".

Stream Bank Condition

- Required.
- The sum of the percentages for the left bank and right bank should each equal 100 percent independently.

Habitat Assessment Summary Sheet

- Required.

- The prevailing habitat must be circled (either riffle/run or glide/pool).
- The prevalence should match the dominant habitat type from the “Longitudinal Habitat Distribution” section. If it does not, reconcile with the regional office.
- Numbers must be entered only in the shaded boxes under the prevalence selected.
- Do not total the numbers at the bottom of the table.

Pool Quality Index

- Required.
- There should be no blanks on the pool quality index form.
- “Max Pool Depth” must be equal to or greater than “Tailed Depth”.
- All measurements entered into the table must be actual numbers. Words such as “silt”, “boulder”, or “all sand” are not acceptable. It is also unacceptable to enter ranges such as “<1mm” or “>254mm.”
- Double check to see that the proper code was assigned. Data entry only inputs the raw data; however, if the code the crew wrote does not match the raw data, it must be corrected.
- All numbers must be legible.

Map Page

- Required.
- The map requires five pieces of information:
 - Stream Name
 - Site ID
 - Map Name
 - Scale
 - Site clearly labeled on the map with an arrow, X, etc.

Verifying Bacteria Data

Bacteria samples have gone to a laboratory for analysis. The quality control verification process requires the following:

- A screening sheet submitted for every BURP site.
- A grab sample sheet.
- Five additional sample sheets if the grab sample is positive.
- All the samples collected within a 30-day period, or else the data will be rejected.

Forms will be debatched that do not include a filled out screening sheet. See Appendix D for an example of a screening sheet.

Verifying Periphyton Data

Periphyton samples have gone to a laboratory for analysis. Periphyton data will not be entered into the BURP database and will therefore have no data control verification procedures in place this year.

Verifying Macroinvertebrate Data

Data resulting from macroinvertebrate samples undergoes quality control procedures by the contracting laboratory, EcoAnalysts, Inc. Verification occurs at the steps for sorting and

subsampling, as well as identification and enumeration. During sorting and subsampling, a random 10 percent of the samples is selected and examined by a different technician. At least 95 percent of all the invertebrates in the sample must be removed for identification. If fewer than 95 percent are removed, then the entire sample will be redistributed for a new random sample. Identification is also verified on at least 10 percent of all samples. Once a taxonomist completes identification and enumeration, the sample is identified and enumerated by a separate taxonomist. A percent similarity index is calculated on the two samples and must be at least 95 percent similar. All discrepancies are investigated and reconciled before any more samples are processed. In addition, the synoptic collections from each IDEQ regional office are regularly reviewed to ensure taxonomic resolution and consistency are being maintained.

Verifying Fish Data

The BURP crews or other authorized personnel capture fish at selected BURP sites. The length and total number of species and individuals are recorded on fish forms, as depicted in Appendix E. A voucher specimen of each species will be collected from any fish with anomalies and fish with incident mortalities due to electrofishing or handling. The voucher specimens are sent to a professional taxonomist for positive identification and the results are sent to the state office. The BURP crews send fish field forms to the state office. The fish field forms contain the header information, field comments, and vouchered as well as non-vouchered fish information.

The tracking and auditing procedure is as follows:

Field Form Accounting

- Stamp the date received on all the forms. The forms from the lab will usually have different dates than the forms from the regions.
- At least four pages are necessary per site: a header page, a fish collection data form, a page for size class information, and the voucher sheet with the taxonomist's signature. Staple the pages in this order. Sometimes duplicates are received. These are not necessary to keep and can be recycled. Any extraneous pages, such as copies of crew notebooks, can also be recycled as long as all information on those pages is on the four kept pages. Some crews attach a map pinpointing their location. Staple it to the back of the forms. A map is important evidence since some fishing occurs within the representative reach and not necessarily the site at which BURP monitoring occurred.
- Enter a group of fish forms ("batch") onto one of the sheets on the "Lab Analysis Tracking Sheet" clipboard. Try not to make the batches more than 21 forms, which is the number of lines on the tracking sheet. Attach a blue cover sheet on the batch and fill out the information on it.
- The batch is now ready to be verified by QC.

Data Entry Form Completion

- A fish data entry form is required for every fished site.
- Fill out the site ID, waterbody, date, number of passes, and effort (number of seconds of total shock time) at the top of the form for a site, taking the information from the field form header. NOTE: The year of the site ID might not equal the date collected. For example, 2000SBOIA003 may have been collected in 2001. However, the data should not be older

than five years from the assessment date.

- The following section explains how to fill out the taxa code, specimen identification confidence, and size class information. Be aware that each crew of each region may have filled out the fish forms differently. The information should all be there, but sometimes needs more in-depth examination.

Step 1:

- Begin with the first species list on the voucher sheet. As an example, rainbow trout, *Oncorhynchus mykiss*, taxa code 10, will be used. All fish and their respective taxa codes are listed in Appendix F.
- For this example, 20 rainbows were caught and 5 were vouchered. In the paperwork for the site, there should be length measurements for all the fish in taxa code 10 and a “fish collection data form,” which shows which fish were vouchered. Weight measurements are optional.

Step 2:

- Label the column on the fish data entry form. At the top of the first column, write a “10”, the species code for trout, followed by a “/” and the confidence level of the person who identified the fish:
 - Confidence levels are A, B, C, or D as follows:
A=95%. Bona fide fish taxonomist on field crew and/or representative of all species vouchered and taxonomy done by a bona fide fish taxonomist. Taxonomist must be identified. No visual estimates.
B=90%. Experienced, full-time fisheries biologist on collection crew and/or only some of the species vouchered and taxonomy done by a bona fide fish taxonomist. Fisheries biologist and taxonomist must be identified. No visual estimates.
C=80%. Crew made up of individuals familiar with species. At least one crewmember must be identified. Species were not vouchered. No visual estimates.
D is < or = 80%. No confidence or confidence unknown. May be due to such things as: 1) taxonomist, fisheries biologist, or crewmembers unknown; 2) visual estimates only; 3) poor specimen condition.
- The top of the column should look like this: 10/A

Step 3:

- Next, put tick marks in the proper length categories for each fish that was identified and measured by the lab. Total the number of ticks in each size category and write that total in the box with the tick marks. Circle the total.
- Determine if the vouchered fish were inclusive or exclusive of the counts of non-vouchered fish. Often, this can be done by comparing totals of fishes in each species and/or by comparing lengths of fishes.
- The next column of the fish data entry form is going to be used for taxa code 10's that weren't vouchered. Write a “10” followed by a “/” and the confidence (which is usually “C” because the crews generally are not fish taxonomists or experienced full-time fisheries biologists): 10/C.
- Put tick marks in the appropriate length categories for each fish, sum the tick marks and circle the totals. At the bottom of the column, record and circle the total number of fish that were not vouchered.

- Sometimes the crews do not measure the fish, e.g., when 134 Redside shiners, taxa code 40, between 30mm and 50mm were caught. In this case, write the total at the bottom of the column and write 134 “no lengths” vertically in the column.
- The sum of the two columns regarding rainbow trout, taxa code 10, should equal the total number of fish caught, e.g., vouchered fish + released fish = total fish caught. Double check the total number of fish on the fish data entry form with the totals from the field sheets.
- Occasionally the taxonomist makes remarks about the fish on his/her form. Next to the circled total on the fish data entry form for the fish with the remark, an abbreviation of the remark must be written and circled for each size class in each taxon. These remarks need to be noted with the following abbreviations:
 - V: Vouchered
 - A: Anomalies. Usually black spot disease, other diseases, or lesions
 - J: Juveniles
- Repeat the procedure for each size class of each species at the site.
- Sometimes the crews note the number of tadpoles and other animals they see in the water. These should not be added to the fish data entry form since they are not fish. Amphibians should be noted in the field comments section.
- When all the fish species are accounted for, the fish data entry form should be stapled to the front of the other four pages regarding that site.
- Fish weight should be reported per fish in grams.

Form Reconciliation

It might very well happen that mistakes are made and not caught the same year. The following protocol describes error reconciliation for the fish forms.

- Using the signed voucher form, check to see that all vouchered species are listed in the proper length category. Also make sure all juveniles and anomalies are properly marked.
- Using the Fish Collection Record (with size class and total number of released fish), check that all fish are accounted for and total counts correspond.
- If the error is not obvious by this point and has not been corrected, override the previous data entry form and start over. Most often, it is easier to ignore a confusing sheet than try and figure it out.
- If unsure that the new data entry form is correct, check with the BURP fish contact in the state office.

Sometimes the fish are misidentified on the field form the crew submits. Always group misidentified fish according to the identification given by the certified taxonomist. For example, if the crew records 17 rainbow trout (taxacode 10) and no other *Oncorhynchus* spp., whereas the taxonomist identifies 9 of those 17 as cutthroat trout (taxacode 11), it would be correct to label the vouchered fish as 11/A and non-vouchered fish as 11/C, NOT 11/A for vouchered fish, and 10/C for non-vouchered fish.

The five pages necessary for a fished site to be complete include:

1. Data entry form
2. Header sheet
3. Fish collection data form
4. Size classification sheet
5. Lab sheet with taxonomist's signature

Data Entry

Data Entry Rejection Process

The purpose of data entry review is to both expedite and increase the accuracy of data in the BURP database. When a form has been submitted that has incompatible information with the BURP database, data entry follows these guidelines in order to resolve and track the data.

- The erroneous field is circled on the form and a flag is placed on the edge of the page locating the error. Some examples include too many measurements in the wetted depth measurements, there is an illegible word or number, or a mandatory field is blank.
- When data entry has completed the entries that can be made from the batch, the errors are then transferred to an error log to track all requested actions by field, batch number, Site ID, error description, and count.
- The batch is logged out of data entry custody.
- The batch is returned to the QC staff.
- The QC staff resolves the error, documents the solution, and initials the corrections.
- Field forms with errors are put in a new batch and returned to data entry.
- The batch is logged into data entry custody again.
- Data entry staff check new information for compatibility with the BURP database.

Data Entry Verification

Once new site data are entered, data entry personnel generate a site data verification report from the BURP database. Each entry of the data is verified on screen by a separate member of the data entry staff. After data verification, a final printed copy of the site data verification report is attached to the field sheets before the sheets are returned to quality assurance personnel.

Database Error Tracking

A tracking process has been developed in order to record errors on the database that have been identified and corrected. A cumulative database correction logsheet tracks corrections that have been made to the paper file and the electronic database. An example of the logsheet is shown in Figure 4. The following information is necessary to track errors once erroneous information has already been entered into the database:

- A hard copy of the error is submitted to quality assurance personnel. The error identification format may be an E-mail or printed note. The hard copy shall identify the error and the name of the person who identified the error.
- Quality assurance personnel shall enter the date and the person who identified the error into

the cumulative database correction log.

- The BURP file containing the error is pulled, a copy of the error identification communication is attached, the database correction logsheet is attached, and the packet is forwarded to data entry.
- When data entry corrects the error in the database, the database correction logsheet is dated and initialed, and the packet is returned to quality assurance personnel.
- Once quality assurance personnel receive the packet after the electronic database has been corrected, the paper file is corrected, dated and initialed and the database correction logsheet is dated and initialed.
- When the correction has been finalized in the paper file and the electronic database, the original person reporting the error is notified of the change.

Figure 4. Example of the database error tracking logsheet.

BENEFICIAL USE RECONNAISSANCE PROJECT					
Field Form Errors Corrected on Database					
	Date Error Identified	Person That Identified the Error	Date Error Corrected in Database (Initial)	Date Error Corrected in Paper File (Initial)	Date Person Reporting Error was Notified of the Change
①	12/22/2000	Sean Woodhead-TWF	BU 2-2-01	DA 2/5/2001	DA 2/5/2001
②	3/6/2001	Sean Woodhead-TWF	BU 3-9-01	DA 3/9/2001	DA 3/9/2001
③	9/17/2001	Brenda Valverde	- NA -	DA 9/17/2001	DA 9/18/2001

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- 1995 version prepared by Robert Steed, Carrie Syme, and Bryce England (IDEQ Monitoring and Technical Support Bureau)
- 1996 version updated by Michael Edmondson, Carrie Syme (IDEQ Watershed Monitoring and Analysis Bureau)
- 1998 version updated by Richard Lee (IDEQ Watershed Monitoring and Analysis Bureau)
- 1999 version updated by William Clark, Morgan Cole, Bryce England (IDEQ Watershed Monitoring and Analysis Bureau) Clyde Lay and Sean Woodhead IDEQ (Twin Falls Regional Office)
- 2001 version updated by Darcy Sharp and Robert Steed (IDEQ Technical Services Bureau)

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Other contributors include: Barry Burnell, Brenda Valverde, Don Zaroban, and Mike Edmondson.

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Appendix A

BURP Field Forms

2001 Beneficial Use Reconnaissance Program Field Forms Idaho Department of Environmental Quality

Site Identification

Stream Name: _____ Site ID: _____ Date (YYYY/MM/DD): _____

HUC: _____ PNRs: _____ WBID No.: _____

Public Land Survey: Twnshp _____ Range _____ Section _____ 1/4 of the _____ 1/4 of the _____ 1/4

Latitude: _____ Degrees _____ Minutes _____ Seconds _____ Longitude: _____ Degrees _____ Minutes _____ Seconds _____ GPS Filename: _____

Datum: NAD83 _____ NAD27 _____ Other _____ Lat/Long Confidence: 2-5 meters _____ 100 meters (raw) _____ 500 meters (estimate) _____

County: _____ Ecoregion: _____ Map Elevation (ft or m) _____

Location Relative to Landmark _____ GPS Elevation (m) _____

Weather Conditions _____ Crew Members: _____

Data Collection

General Wetted Width: _____ meters Total Reach Length: _____ (40 X wetted width or 100m minimum)

Stream Order: 1 2 3 4 5 (circle one) Stream Gradient: _____ % Rosgen Stream Type: _____

Water Temperature: _____ Time: _____ Amphibians Observed: _____

Air Temperature (C): _____ Fish Observed: _____

Conductivity (µs/cm) _____

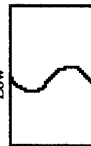
Valley Type:

circle one

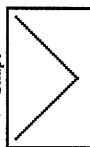
U - Shape



Low



V - Shape



Moderate



Trough-Like



High



Flat bottom



Braided



Box Canyon



Activities

Affecting Reach*

Circle all That Apply:

- Forestry Mining
Agriculture Roads
Recreation Urban
Diversion Grazing
Wilderness
Beaver Complex
Other: _____

Collected:

- ☐ Macroinvertebrate ☐ Fish ☐ Periphyton ☐ Bacteria ☐ Amphibian

☐ Non DEQ Fish Data Exists Source: _____

Date (YYYY/MM/DD):

Site ID:

Stream Name:

Additional Information (continued):

Page 2

2001 Beneficial Use Reconnaissance Program Field Forms

Stream Name: _____

Site ID: _____

Date (YYYY/MM/DD): _____

Discharge Measurement						
Tape:	Width	Depth	Area	Velocity	Velocity	Discharge
ft	ft	ft	sq ft	ft/sec	ft/sec	cfs
LWE						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
RWE						
Total					Flow	

MacroInvertebrate Samples

Were samples taken during low/stable flow period
(July 1 through October 15)? Yes No

Sample No. 1

Label: _____

Sampler Used: Hess Surber Kick

Habitat Sampled: Riffle Run Glide Pool

Time: _____ Split: _____

By: _____

Sample No. 2

Label: _____

Sampler Used: Hess Surber Kick

Habitat Sampled: Riffle Run Glide Pool

Time: _____ Split: _____

By: _____

Sample No. 3a

Label: _____

Sampler Used: Hess Surber Kick

Habitat Sampled: Riffle Run Glide Pool

Time: _____ Split: _____

By: _____

Sample No. 3b

Label: _____

Sampler Used: Hess Surber Kick

Habitat Sampled: Riffle Run Glide Pool

Time: _____ Split: _____

By: _____

2001 Beneficial Use Reconnaissance Program Field Forms

Stream Name:

Site ID:

Date (YYYY/MM/DD):

Wolman Pebble Count (Modified)

Particle Size	Riffle 1		Riffle 2		Riffle 3	
	Within	Outside	Within	Outside	Within	Outside
Wetted	Wetted	Wetted	Wetted	Wetted	Wetted	Wetted
silt/clay						
0-1 mm						
sand						
1.1-2.5 mm						
Subtotal						
very fine pebble						
2.51-6 mm						
pebble						
6.1-15 mm						
coarse pebble						
15.1 - 31 mm						
very coarse pebble						
31.1-64 mm						
small cobble						
64.1 -128 mm						
large cobble						
128.1-256 mm						
small boulder						
256.1-512 mm						
medium boulder						
512.1-1024 mm						
large boulder						
1024.1 mm & larger						
Total						

Large Organic Debris

Total number of pieces larger than 10cm diameter and 1m length: (Within Bankfull)	
---	--

Canopy Closure

	Riffle 1	Riffle 2	Riffle 3
Left Bank*			
Center			
Up			
Center			
Down			
Right Bank*			

* Facing Upstream

2001 Beneficial Use Reconnaissance Program Field Forms

Stream Name: _____

Site ID: _____

Date (YYYY/MM/DD): _____

Width/Depth Ratio

Bankfull	Wetted	Bankfull	Avg Wetted
Width(m)	Width(m)	Height(m)	Depth(m)

Transect 1

Wetted Depth Measurements (m)**

--	--	--	--	--	--	--	--

Habitat Type: Riffle Run Glide Pool

--	--	--	--

Transect 2

Habitat Type: Riffle Run Glide Pool

--	--	--	--	--	--	--	--

--	--	--	--

Transect 3

Habitat Type: Riffle Run Glide Pool

--	--	--	--	--	--	--	--

** Wetted Width # Measurements

< 1 m	3
1 m to 4 m	5
> 4 m	7

Photo Information

Roll Name (Number): _____

Photo #: _____ Azimuth _____ Direction (circle one): Upstream Downstream Panorama

Photo #: _____ Azimuth _____ Direction (circle one): Upstream Downstream Panorama

Photo #: _____ Azimuth _____ Direction (circle one): Upstream Downstream Panorama

Other:

Photo #: _____ Caption: _____

Photo #: _____ Caption: _____

Photo #: _____ Caption: _____

Comments:

Horizontal Distance of Undercut Banks

	Left Bank	Right Bank
Transect 1		
Transect 2		
Transect 3		

Date (YYYY/MM/DD):

Appendix B

Field Form Tracking Procedures

This section contains examples of the forms generated for tracking BURP data paper copies. The titles and purposes of the forms are listed below, and the forms can be found on the following pages.

BURP Field Batch Tracking Sheet:	Tracks the field forms by batch number; also includes debatch information.
BURP Field Form Tracking Sheet:	Tracks the field forms by individual site ID; also includes debatching, packing slip, and correction information.
BURP Lab Analysis Tracking Sheet:	Tracks the macro/fish samples and lab analysis forms by batch number.
BURP Field Form Error/Note Sheet:	Lists the errors found on each form.
BURP Crew Information:	Used to compile information on the most common errors made by each crew; also used when writing memos to the crews to remind them of certain procedures.

Beneficial Use Reconnaissance Project Field Form Batch Tracking Sheet

Data verified:
Sent to Data Entry:
Received from Data Entry:

Batch #: _____

of Forms: _____

[illegible]

BENEFICIAL USE RECONNAISSANCE PROGRAM FIELD FORMS

2001 Tracking Sheet

[illegible]

**BENEFICIAL USE RECONNAISSANCE PROGRAM
2001 Lab Analysis Batch Tracking Sheet**

[illegible]

BURP Field Form Error/Note Sheet

Site ID: _____ Batch: FB _____ Date: _____

Page #: Comment:

[illegible]

**Beneficial Use Reconnaissance Project
Crew Information**

Crew:
Date:

Forms _____ through _____

Description of error	Page	Tallied Errors

Comments:

Action:

Appendix C

Field Form Debatching Procedures

Debatching Criteria

Field forms cannot be entered into the database if any of the REQUIRED information is missing. State office personnel are very limited in the assumptions they can make regarding missing information. Every effort should be made to resolve the missing information over the phone or via email. Forms will be verified faster and more efficiently this way. Debatching should be considered a last resort. Photocopy all changes made and send to the regional office for record update and verification. The following is a list of changes state office personnel can make:

- Stream name format problems, when recorded stream name does not exist within GNIS
- County (according to lat/long, map, and PLSS)
- May add negative sign to “Longitude Degrees” field when reported as positive
- Public Land Survey typos or format
- Changing Rosgen stream type classification from lower to upper case
- Conversions of air and water temperatures recorded in °F to °C
- Discharge, if changes are minimal and do not change above the 5 CFS threshold
- Math errors
- Map name and scale
- Spelling errors
- Other obvious typographical errors
- Additions in characters to the date field to format correctly
- Development of the Fish Verification Form

The following is a list of errors which state office personnel cannot fix. Corrections must be made at the discretion of the regional office:

- Information cut off in copying, or copies illegible
- Unsolvable problems with map information and stream names
- Location descriptions that are too vague or missing altogether
- No date
- No Water Body Identification (WBID) number
- Missing crew members’ names on front page or macroinvertebrate samples
- Macroinvertebrate habitat and/or sampler type missing
- Pool Quality Index entries which are not numbers
- Stream bank conditions which do not total exactly 100 percent for each bank
- Longitudinal Habitat Distribution is not within ½ meter of the Reach Length on page one, or the total is less than 100m
- No roll name for photos taken
- Valley type or sinuosity not circled
- Rosgen Stream Type missing
- Empty boxes in Canopy Closure table

Procedures for Debatching and Rebatching Field Forms

Debatching

If an error on a form by a field crew cannot be fixed by quality assurance personnel in the state office, the form must be sent back to the region so the error can be fixed. The following process is used when a form is debatched and sent back to the region for correction:

1. First, stamp the form to be debatched in the bottom right-hand corner of every page with the yellow D-stamp. The accompanying error sheet (used in the QC process to list errors found on each form) should be stamped in the upper left-hand corner.
2. Fill out a white/yellow debatch slip with the appropriate information. In the "Comments" section, instructions need to be provided on how to fix the error(s). These should be written as if writing directly to a crewmember.
3. Attach the white half of the debatch slip to the error sheet and file in the debatch file under the appropriate date. Attach the yellow half of the debatch slip to the entire form and send it to the region.
4. On the field form tracking sheet and batch tracking sheet, enter the date the form was debatched and the date it was sent to the region in the appropriate columns.
5. File the error form with its attached white debatch slip in the appropriate region's file folder in the "Debatch" hanging file.

Rebatching

The following process is used when a debatched form is corrected and is resubmitted by the region:

1. When the form returns from the region, it should still have the yellow slip attached to the D-stamped copies. On the field form tracking sheet and batch tracking sheet, note the date that the form was returned.
2. Find the corresponding white slip/error sheet that has been filed under the appropriate region in the "Debatch" hanging file.
3. Detach the D-slips and throw away the yellow copy. Stamp the white copy with an IDEQ "Received" stamp.
4. The form is ready to re-batch. Compile a batch-sized number of returned forms and log them into the logbook as if they were a new batch (make a note on the batch-tracking sheet that this batch contains rebutted forms).
5. Circle the stamped Ds (on the error sheet and forms) to signify that they have been rebatched.
6. If any form contains further errors that cannot be handled by the state office, it may be debatched again, following the same procedure as above. If the form contains no errors, it may be sent to data processing with the batch.
7. File the error sheets and the white debatch slips for the new batch in the error sheet folder for the appropriate region.

Note: If changes are made to any form by quality assurance personnel, either before or after the form was sent back to the region, the forms must be photocopied, highlighted, and sent to the regions. Although the crew might have noted changes on the form, they may have noticed only the error mentioned on the debatching form, remaining unaware of any other changes state office personnel have made.

IDAHO DEPARTMENT OF HEALTH & WELFARE
Division of Environmental Quality
Beneficial Use Reconnaissance Project
'D' SLIP

SITE # _____ EXTRACTED BY _____

FIELD FORMS _____ or LAB ANALYSIS FORM _____

EXTRACTED FROM BATCH # _____ DATE EXTRACTED _____

COMMENTS: _____

Appendix D

Bacteria Screening Sheet

Idaho Division of Environmental Quality

Bacteria Check Sheet

Stream Name:

HUC #:

Site ID:

Collection Date:

1	Is Primary Contact Recreation a Designated or Existing Use
---	--

Yes

No

If Yes collect 1 sample *****

if No collect 1 sample *****

2	Are upstream land uses affecting recreation use **
3	Other reasons ***

Yes
Yes

No
No

if Yes collect 1 sample *****
if Yes collect 1 sample *****

explain other reasons

collect 1	
collect 5	

** include agriculture, grazing, recreation, urban, cabins, septic

*** on 303d list for bacteria, etc.

***** if e-coli exceeds 406/100ml, collect 5 samples over 30 days

***** if e-coli exceeds 576/100ml, collect 5 samples over 30 days

Sample Results

sample #	date	time	location	E-coli results
sample #1				
sample #2				
sample #3				
sample #4				
sample #5				
sample #6				
* if sample #1 exceed standards, collect remaining 4 samples				geometric mean

other notes:

--

Appendix E

Example fish forms

IDEQ FISH DATA ENTRY FORM

Site ID: 2000SLEW3401 Water body: LONG MEADOW CREEK Date: 15 JUL 2000

Collection Record (pass 1 of 1, effort 900 seconds)

T. Length (mm)	Species taxon code/Taxonomic identification confidence (A, B, C, or D)						
	211A	111A	781A	111C	81C	961C	1
10-19							
20-29							
30-39							
40-49							
50-59	II VJ (2)		I VJ 56 (1)	II (2)			
60-69			I VJ 65 (1)	III (4)			
70-79				III (4)			
80-89				II (2)			
90-99	II VJ (2)			III (3)			
100-109		I VA 102 (1)		III (3)			
110-119				II (2)			
120-129				III (3)			
130-139	I VJ 137 (1)	I VJ 137 (1)					
140-149	I VJ 147 (1)			I (1)			
150-159				II (2)			
160-169				III (4)			
170-179				II (2)			
180-189							
190-199							
200-209							
210-219							
220-229							
230-239							
240-249							
250-259							
260-269							
270-279							
280-289							
290-299							
300-309							
310-319							
320-329							
330-339							
340-349							
350-359							
360-369							
370-379							
380-389							
390-399							
400-409							
410-419							
420-429							
430-439							
440-449							
Total	(6)	(2)	(2)	(32)		(11)	

COUNT

LENGTHS

Division of Environmental Quality Fish Data Sheet

Field Information - Shaded areas must be completed before submittal of sample

DEQ Project Code						
Name of Water Body		LONG MEADOW CREEK		Site ID No.		2000SLEWB001
Location Description:		AT MILE MARKER 13 ON FS RD 1963				
Permanent Landmarks						
Station or subsample No.:	County:	Township:	Range:	Section:	Quarter:	
	LATAH	39 N	01 E	4	SE, NE, SW	
Elevation:	Collector(s) First (or initial) & Last Name(s):				Sample Method:	
	K. STEIN, C. KATHMAN, D. CLE				(AC) E-FISHED	
Collection date (YY/MM/DD)	Reach Length		Avg. Reach Width:			
2000/07/15	100 m		5.2 m			
Field Taxonomist:	Temperature:		Conductivity:			
K STEIN	17.4 C		70.4			
Identifying Lab Information:						
Lab Name:	Date Into Lab:		Date Reported:			
Taxonomist (First Initial & Last Name):			Remarks:			
Taxa Vouchered:						
CUTTLECAT TROUT 57mm, 67mm, 110mm, 142mm						
Anomalies Noted: BENT BACK ON ONE FISH						
Equipment Settings: J4 400-500 V 900 SECONDS						
Species Stocked in last 5 years (note year) NO						
Field Comments:						
KOKANEE SPAWNING THROUGHOUT REACH						

Stream Name LONG MEADOW CREEK Site ID No 2000SLEWB001 Date: 00/07/15

[illegible]

Fish Collection Data Form Adapted from DEQ protocol #6. * see 1996 training manual for updated codes **Fish confidence Codes: A (99.9%) - Must have fisheries taxonomist on collection crew or entire sample preserved and taxa work done by fisheries taxonomist (no visual estimate), B (99%) - Must have an experienced fisheries biologist on collection crew, or only part of sample preserved, C (90%) - Crew made up of individuals familiar with species, D (<90%) - No confidence or confidence unknown. *** Anomalies include parasites, deformities, frayed fins, etc.

Stream Name: LONG MEADOW CREEK Site ID No: 2000SLEWB001 Date: 00/07/15

2001 Beneficial Use Reconnaissance Project Field Forms, Idaho Division of Environmental Quality

Environmental Quality

DEQ Fish Collection Record (Pass <u>1</u> of <u>1</u> effort <u>900</u> seconds)						
Total Length (mm)	Taxa code/ID Confidence					
	BROOK TROUT	CUTTHROAT TROUT	SCULPIN			
10-19						
20-29						
30-39						
40-49						
50-59	✓	✓				
60-69	✓	✓				
70-79		✓				
80-89		✓				
90-99	✓	✓				
100-109	✓	✓				
110-119		✓				
120-129		✓				
130-139	✓					
140-149		✓				
150-159	✓	✓				
160-169		✓				
170-179		✓				
180-189						
190-199						
200-209						
210-219						
220-229						
230-239						
240-249						
250-259						
260-269						
270-279						
280-289						
290-299						
≥ 300 mm						

Stream Name LONG MEADOW CREEK Site ID No 2000SLEWB001 Date: 00/07/15

Page 3

KOKANEE SPAWNING
THROUGHOUT REACH

SAW 2 ADULT TAILED FROGS

Department of Environmental Quality Fish Voucher Data Sheet

Lab Name: EcoAnalysts, Inc. Date Into Lab 08/01/2000 Taxonomist: Dr. Richard Wallace

Stream Name: Long Meadow Creek Site ID No: 2000SLEWB001 Date Identified 11 DEC 2000

[illegible]

Appendix F-Fish Taxa Codes

FISH TAXA CODE	COMMON NAME	SCIENTIFIC NAME	FAMILY
1	PACIFIC LAMPREY	<i>Lampetra tridentata</i>	PETROMYZONTIDAE
2	WHITE STURGEON	<i>Acipenser transmontanus</i>	ACIPENSERIDAE
3	AMERICAN SHAD	<i>Alosa sapidissima</i>	CLUPEIDAE
4	LAKE WHITEFISH	<i>Coregonus clupeaformis</i>	SALMONIDAE
5	CHUM SALMON	<i>Oncorhynchus keta</i>	SALMONIDAE
6	COHO SALMON	<i>Oncorhynchus kisutch</i>	SALMONIDAE
7	SOCKEYE SALMON	<i>Oncorhynchus nerka</i>	SALMONIDAE
8	KOKANEE	<i>Oncorhynchus nerka</i>	SALMONIDAE
9	CHINOOK SALMON	<i>Oncorhynchus tshawytscha</i>	SALMONIDAE
10	RAINBOW TROUT	<i>Oncorhynchus mykiss</i>	SALMONIDAE
11	CUTTHROAT TROUT	<i>Oncorhynchus clarki</i>	SALMONIDAE
12	BEAR LAKE WHITEFISH	<i>Prosopium abyssicola</i>	SALMONIDAE
13	PYGMY WHITEFISH	<i>Prosopium coulteri</i>	SALMONIDAE
14	BONNEVILLE CISCO	<i>Prosopium gemmiferum</i>	SALMONIDAE
15	BONNEVILLE WHITEFISH	<i>Prosopium spilonotus</i>	SALMONIDAE
16	MOUNTAIN WHITEFISH	<i>Prosopium williamsoni</i>	SALMONIDAE
17	GOLDEN TROUT	<i>Oncorhynchus aguabonita</i>	SALMONIDAE
18	ATLANTIC SALMON	<i>Salmo salar</i>	SALMONIDAE
19	BROWN TROUT	<i>Salmo trutta</i>	SALMONIDAE
20	ARCTIC CHAR	<i>Salvelinus alpinus</i>	SALMONIDAE
21	BROOK TROUT	<i>Salvelinus fontinalis</i>	SALMONIDAE
22	BULL TROUT	<i>Salvelinus confluentus</i>	SALMONIDAE
23	LAKE TROUT	<i>Salvelinus namaycush</i>	SALMONIDAE
24	ARCTIC GRAYLING	<i>Thymallus arcticus</i>	SALMONIDAE
25	RAINBOW SMELT	<i>Osmerus mordax</i>	OSMERIDAE
26	NORTHERN PIKE	<i>Esox lucius</i>	ESOCIDAE
27	CHISELMOUTH	<i>Acrocheilus alutaceus</i>	CYPRINIDAE
28	GOLDFISH	<i>Carassius auratus</i>	CYPRINIDAE
29	LAKE CHUB	<i>Couesius plumbeus</i>	CYPRINIDAE
30	COMMON CARP	<i>Cyprinus carpio</i>	CYPRINIDAE
31	UTAH CHUB	<i>Gila atraria</i>	CYPRINIDAE
32	TUI CHUB	<i>Gila bicolor</i>	CYPRINIDAE
33	LEATHERSIDE CHUB	<i>Gila copei</i>	CYPRINIDAE
34	PEAMOUTH	<i>Mylocheilus caurinus</i>	CYPRINIDAE
35	FATHEAD MINNOW	<i>Pimephales promelas</i>	CYPRINIDAE
36	NORTHERN SQUAWFISH	<i>Ptychocheilus oregonensis</i>	CYPRINIDAE
37	LONGNOSE DACE	<i>Rhinichthys cataractae</i>	CYPRINIDAE
38	LEOPARD DACE	<i>Rhinichthys falcatus</i>	CYPRINIDAE
39	SPECKLED DACE	<i>Rhinichthys osculus</i>	CYPRINIDAE
40	REDSIDE SHINER	<i>Richardsonius balteatus</i>	CYPRINIDAE
41	TENCH	<i>Tinca tinca</i>	CYPRINIDAE
42	UTAH SUCKER	<i>Catostomus ardens</i>	CATOSTOMIDAE
43	LONGNOSE SUCKER	<i>Catostomus catostomus</i>	CATOSTOMIDAE
44	BRIDGELIP SUCKER	<i>Catostomus columbianus</i>	CATOSTOMIDAE
45	BLUEHEAD SUCKER	<i>Catostomus discobolus</i>	CATOSTOMIDAE
46	LARGESCALE SUCKER	<i>Catostomus macrocheilus</i>	CATOSTOMIDAE
47	MOUNTAIN SUCKER	<i>Catostomus platyrhynchus</i>	CATOSTOMIDAE
48	BLACK BULLHEAD	<i>Ameiurus melas</i>	ICTALURIDAE
49	BROWN BULLHEAD	<i>Ameiurus nebulosus</i>	ICTALURIDAE
50	CHANNEL CATFISH	<i>Ictalurus punctatus</i>	ICTALURIDAE
51	TADPOLE MADTOM	<i>Noturus gyrinus</i>	ICTALURIDAE
52	FLATHEAD CATFISH	<i>Pylodictis olivaris</i>	ICTALURIDAE
53	SAND ROLLER	<i>Percopsis transmontana</i>	PERCOPSIDAE
54	BURBOT	<i>Lota lota</i>	GADIDAE
55	WESTERN MOSQUITOFISH	<i>Gambusia affinis</i>	POECILIIDAE
56	GUPPY	<i>Poecilia reticulata</i>	POECILIIDAE
57	GREEN SUNFISH	<i>Lepomis cyanellus</i>	CENTRARCHIDAE
58	PUMPKINSEED	<i>Lepomis gibbosus</i>	CENTRARCHIDAE
59	WARMOUTH	<i>Lepomis gulosus</i>	CENTRARCHIDAE
60	BLUEGILL	<i>Lepomis macrochirus</i>	CENTRARCHIDAE
61	SMALLMOUTH BASS	<i>Micropterus dolomieu</i>	CENTRARCHIDAE
62	LARGEMOUTH BASS	<i>Micropterus salmoides</i>	CENTRARCHIDAE
63	WHITE CRAPPIE	<i>Pomoxis annularis</i>	CENTRARCHIDAE
64	BLACK CRAPPIE	<i>Pomoxis nigromaculatus</i>	CENTRARCHIDAE
65	YELLOW PERCH	<i>Perca flavescens</i>	PERCIDAE

66	WALLEYE	<i>Stizostedion vitreum</i>	PERCIDAE
67	MOTTLED SCULPIN	<i>Cottus bairdi</i>	COTTIDAE
68	PAIUTE SCULPIN	<i>Cottus beldingi</i>	COTTIDAE
69	SLIMY SCULPIN	<i>Cottus cognatus</i>	COTTIDAE
70	SHORthead SCULPIN	<i>Cottus confusus</i>	COTTIDAE
71	BEAR LAKE SCULPIN	<i>Cottus extensus</i>	COTTIDAE
72	SHOSHONE SCULPIN	<i>Cottus greeni</i>	COTTIDAE
73	WOOD RIVER SCULPIN	<i>Cottus leiopomus</i>	COTTIDAE
74	TORRENT SCULPIN	<i>Cottus rhotheus</i>	COTTIDAE
75	LAMPREY	<i>Lampetra sp.</i>	PETROMYZONTIDAE
76	STURGEON	<i>Acipenseridae sp.</i>	ACIPENSERIDAE
77	WHITEFISH	<i>Coregonus sp.</i>	SALMONIDAE
78	SALMON	<i>Oncorhynchus sp.</i>	SALMONIDAE
79	WHITEFISH	<i>Prosopium sp.</i>	SALMONIDAE
80	TROUT	<i>Salmo sp.</i>	SALMONIDAE
81	CHAR	<i>Salvelinus sp.</i>	SALMONIDAE
82	GRAYLING	<i>Thymallus sp.</i>	SALMONIDAE
83	PIKE	<i>Esox sp.</i>	ESOCIDAE
84	CHUB	<i>Couesius sp.</i>	CYPRINIDAE
85	CHUB	<i>Gila sp.</i>	CYPRINIDAE
86	SQUAWFISH	<i>Ptychocheilus sp.</i>	CYPRINIDAE
87	DACE	<i>Rhinichthys sp.</i>	CYPRINIDAE
88	SHINER	<i>Richardsonius sp.</i>	CYPRINIDAE
89	SUCKER	<i>Catostomus sp.</i>	CATOSTOMIDAE
90	CATFISH	<i>Ictalurus sp.</i>	ICTALURIDAE
91	TROUT-PERCH	<i>Percopsis sp.</i>	PERCOPSIDAE
92	SUNFISH	<i>Lepomis sp.</i>	CENTRARCHIDAE
93	BASS	<i>Micropterus sp.</i>	CENTRARCHIDAE
94	CRAPPIE	<i>Pomoxis sp.</i>	CENTRARCHIDAE
95	PERCH	<i>Perca sp.</i>	PERCIDAE
96	SCULPIN	<i>Cottus sp.</i>	COTTIDAE
97	HERRINGS	<i>Clupeidae</i>	CLYPEIDAE
98	TROUT	<i>Salmonidae</i>	SALMONIDAE
99	MINNOWS	<i>Cyprinidae</i>	CYPRINIDAE
100	CATFISH	<i>Ictaluridae</i>	ICTALURIDAE
101	GUPPY	<i>Poeciliidae</i>	POECILIIDAE
102	SUNFISH	<i>Centrarchidae</i>	CENTRARCHIDAE
103	PERCH	<i>Percidae</i>	PERCIDAE
104	BULLHEAD	<i>Ameiurus sp.</i>	ICTALURIDAE
105	COD	<i>Lota sp.</i>	GADIDAE
106	SMELT	<i>Osmerus sp.</i>	OSMERIDAE
107	ORIENTAL WEATHERFISH	<i>Misgurnus anguillicaudatus</i>	COBITIDAE
108	WEATHERFISH	<i>Misgurnus sp.</i>	COBITIDAE
109	LOACH (COBITIDAE)	<i>Cobitidae</i>	COBITIDAE
110	CONVICT CICHLID	<i>Cichlasoma nigrofasciatum</i>	CICHLIDAE
111	BLUE TILAPIA	<i>Tilapia aurea</i>	CICHLIDAE
112	MOZAMBIQUE TILAPIA	<i>Tilapia mossambica</i>	CICHLIDAE
113	REDBELLY TILAPIA	<i>Tilapia zilli</i>	CICHLIDAE
114	SHORTFIN MOLLY	<i>Poecilia mexicana</i>	POECILIIDAE
115	GREEN SWORDTAIL	<i>Xiphophorus helleri</i>	POECILIIDAE
116	YELLOW BULLHEAD	<i>Ameiurus natalis</i>	ICTALURIDAE
117	STEELHEAD	<i>Onchorhynchus mykiss</i>	SALMONIDAE
118	GRASS CARP	<i>Ctenopharyngodon idella</i>	CYPRINIDAE
119	SPOTTAIL SHINER	<i>Notropis hudsonius</i>	CYPRINIDAE
120	BLUE CATFISH	<i>Ictalurus Furcatus</i>	ICTALURIDAE
121	PLATY	<i>Xiphophorus SP.</i>	POECILIIDAE
122	SAUGER	<i>Stizostedion canadense</i>	PERCIDAE
123	AMERICAN SHAD	<i>Alosa sapidissima</i>	CLUPEIDAE
124	UMPQUA DACE	<i>Rhinichthys evermanni</i>	CYPRINIDAE
501	CUTTHROAT TROUT (all stocks) X RAINBOW TROUT	<i>Oncorhynchus clarki</i> X <i>O. mykiss</i>	SALMONIDAE
502	BROOK TROUT X BULL TROUT	<i>Salvelinus fontinalis</i> X <i>S. confluentus</i>	SALMONIDAE
503	BROOK TROUT X LAKE TROUT (SPLAKE)	<i>Salvelinus fontinalis</i> X <i>S. namaycush</i>	SALMONIDAE
504	BROOK TROUT X BROWN TROUT (TIGER TROUT)	<i>Salvelinus fontinalis</i> X <i>Salmo trutta</i>	SALMONIDAE
505	TIGER MUSKELLUNGE	<i>Esox lucius</i> x <i>E. masquinongy</i>	ESOCIDAE
9999	Fish	Unidentified	

IDEQ, Cost Per Unit: \$1.75



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